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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁴ :

A61F 9/04, A62B 18/00, 18/02

A1

(11) International Publication Number:

WO 89/10106

(43) International Publication Date:

2 November 1989 (02.11.89)

(21) International Application Number: PCT/US89/01629

(22) International Filing Date: 18 April 1989 (18.04.89)

(30) Priority data:

184,672

22 April 1988 (22.04.88)

US

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US]; 100 Main Street, Gardendale, AL 35071 (US).(74) Agent: BODE, George, A.; Bode & Associates, 2314
Broadway, New Orleans, LA 70125 (US).(81) Designated States: AT (European patent), AU, BB, BE
(European patent), BF (OAPI patent), BG, BJ (OAPI pa-
tent), BR, CF (OAPI patent), CG (OAPI patent), CH
(European patent), CM (OAPI patent), DE (European
patent), DK, FI, FR (European patent), GA (OAPI pa-
tent), GB (European patent), HU, IT (European patent),JP, KP, KR, LK, LU (European patent), MC, MG, ML (OAPI
patent), MR (OAPI patent), MW, NL (European patent), NO,
RO, SD, SE (European patent), SN (OAPI patent), SU, TD
(OAPI patent), TG (OAPI patent).

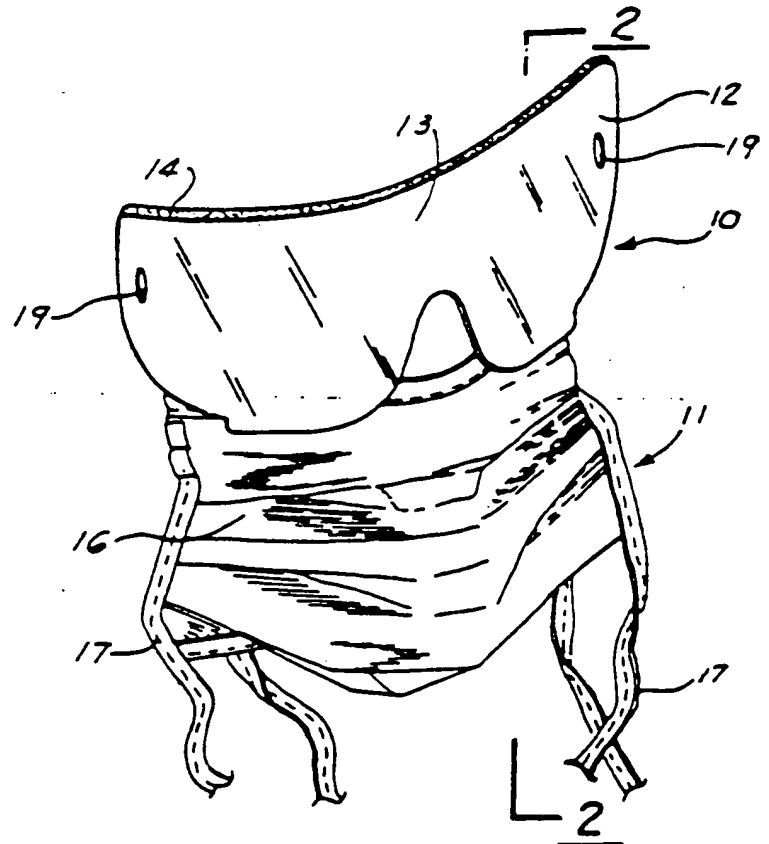
Published

With international search report.

(54) Title: FACE PROTECTOR

(57) Abstract

A face protector (10, 11) which includes an eye shield (10) and a face mask (11), wherein the eye shield (10) is disposable and may be effectively attached to and combined with a disposable, surgical face mask (11) to be used as a composite structure to protect both physician and patient from the possible transmission of infectious diseases. The eye shield (10) includes upper and lower sealing members (14, 15) which serve to protect the eyes of a wearer from possible contamination and to provide comfort for the wearer.



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"FACE PROTECTOR"

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention related to a face protector comprising a combination of an eye shield and a face mask, and more particularly to a disposable eye shield which can be effectively attached to and combined with a disposable, surgical face mask and used as a composite structure to protect both physician and patient from the possible transmission of infectious disease.

2. General Background

With the advent of communicable diseases such as AIDS, it is possible to transmit diseases to innocent victims such as physicians and their assistants by the accidental splattering of blood during surgical procedures, for example, into the eyes of the surgeon or assistant. Since the blood may be contaminated, any covering which would be provided for the eyes, or the face in general should be disposable to avoid the likelihood of spreading the disease from contaminated material which remains on eye coverings in the event the article is reused.

Although medical-type personnel, for example doctors, dentists, nurses, paramedics, etc., have used the surgical mask to protect both the wearer and the patient from communicable diseases, there is no known device which is effective in protecting the entire face of the wearer.

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Hence, an object of the present invention is to provide a shield which covers the eyes and which includes sealing member which contact the body portion around the eyes for preventing blood from splattering into the eyes, which can be effectively combined with a face mask to form a disposable composite structure which protects the entire face of the user.

Another object of the present invention is to provide an eye shield-face mask combination which is inexpensive and easy to make so that its cost will be low.

A further object of the present invention is to provide a combination eye protector-face mask which gives total face protection in the operating room, emergency room, laboratory, dental office, clinic, and in emergency medical law enforcement and in rescue and public safety operations.

Still another object of the present invention is to provide a protective eye shield per se which is effective in protecting the eyes from contamination.

Other objects and advantages of the present invention will become apparent from a consideration of the following detailed description and drawings.

SUMMARY OF THE PRESENT INVENTION

The total face protection medical device of the present invention comprises an eye shield and a face mask. The eye shield according to the present invention includes an elongated

transparent flexible member having integral symmetrical spaced planar surfaces joined by an integral narrowing webbed portion. The extent that the webbed portion narrows depends on the design of the eye shield. Elongated sealing members are sealably attached to the interior surface of the flexible member along its upper edge and its lower edge. Although an adjustable band (not shown) can be included at the sides of the flexible member for holding the flexible member in position with the planar portions curved and covering the eyes of the user, advantageously, when the face mask is attached to the eye shield, the band attachment for the face mask is sufficient to hold both the face mask and the eye shield in place on the face of the wearer.

The face mask which can be used in the total face protector of the present invention can be any of the commonly used face masks presently used by medical-type personnel since it is only necessary that the eye shield is attachable to the face mask. The disposable face mask is generally made of a soft, comfortable, non-irritating inner and outer facing material which possesses excellent breathability and lightweight construction which insures air permeability, even for extended periods of time. It is frequently pleated to provide a large facial pocket for keeping the mask away from the mouth and nose of the user for maximum comfort. One or more ties or elastic

bands, which may be adjustable in length, extend from the side of the mask in order to secure the face mask to the face of the user. Frequently, a contour bar, that is, a flexible strip, for example a flexible aluminum nosepiece is sealed inside the mask at the top edge of the mask in order to insure security and provide a superior fit. Of course, the bottom edge of the mask can also be provided with such a flexible strip. In one type of construction, the face mask is a two layer construction which utilizes a nonwoven outer layer to resist shedding and a soft, comfortable, hypo-allergenic inner layer.

The eye shield which is used in the total face protector of the present invention is a transparent flexible member which is provided with a cushion material, for example a foam strip which extends across the top edge of the eye shield and a similar cushion material or foam strip which extends across the bottom edge of the eye shield. The foam strip can be made of any type of thin plastic foam material, such as for example a polyurethane foam, open and closed cell sponge rubber, cross linked polyethylene foam, cork, sheet rubber, and the like. The foam strips provide comfort for the user and also serve to effectively seal the eyes from possible contamination. The foam strip at the top of the eye shield is provided with adhesive on one side and thus is adhesively attached to the top of the flexible eye shield. The foam strip or strips provided at the

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bottom of the eye shield contains an adhesive on both sides of the foam strip. Thus the adhesive on one side of the foam strip fixes the foam to the eye shield and the adhesive on the other side of the foam strip is used to fix the strip and the flexible eye shield attached thereto to the top of the face mask. Thus, for example, the face mask is first attached to the face of the user, and then protective release liners which cover the adhesive surface of the foam strip at the bottom of the eye shield are removed and the shield is adhesively attached to the top of the face mask. Since the eye shield is of a flexible, light construction, it readily conforms to the contour of the face of the user.

The eye shield utilized in the present invention can also be provided with slots on the lateral sides thereof so that if the user wears glasses, templets of the glasses can extend through the lateral slots for engagement with the ears. Thus, in operation, the eye glasses are always on the outside of the eyeshield.

The optically clear eye shield of the present invention combines the features of being nonfogging, nonglare, nondistortion and spatter resistant whereby a fluid repellent disposal on the shield causes fluids to bead up. The eye shield is a one-piece construction which is comfortable, breathable and possesses a 95%-plus bacterial filtration efficiency.

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The flexible eye shield member is a crystal clear, colorless polyester based film, VISTEX-PS, manufactured by Film Specialists, Inc., Whitehouse, New Jersey, having a permanent anti-fog coating such as that described in U.S. Patent No. 4,467,073 or other similar anti-fog coating. The film has a thickness of 0.0015 inches and its coating is a two-part reactive urethane coating which prevents fogging under all temperature-humidity conditions by causing water droplets to spread, rather than form beads which appear as fog. The film has a scratch resistance which is superior to untreated plastics. Superficial scratches that do appear will heal themselves when moistened by rinsing with water or even by breathing on the film. The film is not affected by freezing, or by temperatures as high as 250 degrees Fahrenheit and its coating will not become soft when wet and will not smudge.

Brief Description of the Drawings

For a further understanding of the nature of and objects of the present invention, reference should be made to the following description taken in conjunction with the accompanying drawings in which like elements are given like reference numerals and wherein:

Figure 1 is a front perspective view of the face protector of the present invention;

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Figure 2 is a perspective view showing the rear portion of the face protector of the present invention showing how the eye shield is adhesively attached to the upper portion of a face mask;

Figure 3 shows one embodiment of the flexible eye shield which is utilized in the present invention;

Figure 4 shows the reverse side of the flexible eye shield which is utilized in accordance with the present invention;

Figure 5 shows another embodiment of a flexible eye shield which can be utilized according to the present invention;

Figure 6 shows another standard type of face mask which can be utilized in combination with the flexible eye shield of the present invention, in its folded up state; and

Figure 7 shows the face mask of figure 6 in its expanded, operative state.

Detailed descriptions of the Preferred Embodiment

Referring now more specifically to the drawings, element 10 in figure 1 represents the flexible eye shield which is utilized in the face protector of the present invention. Element 11 indicates a typical type of face mask which can be utilized in the face protector of the present invention. As discussed herein above, the flexible eye shield of the present invention has been designed so that it can be utilized with any of the well known type of face masks which are readily available in the

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market. The transparent flexible eye shield member 10 included integral planar surfaces 12 separated by a narrowed web portion 13 formed integral with the planar surfaces when the flexible elongated member is curved or positioned over the eyes. Elongated sealing members 14 and 15 are sealably attached to the interior surface of the flexible member along its upper edge and its lower edge. The eye shield can optionally be provided with lateral slots 19 which are adapted to receive the templates of eyeglasses.

The face mask 11 which can be utilized in the face protector of the present invention can be any of the commonly used face masks which are well known in the art. The face mask is frequently provided with a plurality of pleats 16 in order to provide a large facial pocket for keeping the mask away from the mouth and nose of the user for maximum comfort. Also, the face mask is provided with one or more ties 17 or elastic bands 23 which may be adjustable in length for securing the face mask to the face of the user. Frequently, a contour bar 18, such as for example a flexible aluminum nose piece is sealed inside the mask at the top edge of the mask in order to ensure security and provide a superior fit.

Figure 2 shows the backside of the face protector of the present invention wherein a foam strip 14 is attached to the top of the eye shield and a second foam strip 15 is attached to the

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lower portion of the eye shield. The foam strip 15 is provided with a further adhesive surface which is provided with a protective covering 20 shown in figure 4. Thus, when it is desired to attach the eye shield to the face mask, the protective covering 20 is removed from the surface of the foam strip 15, thereby exposing the adhesive material so that the eye shield can be adhesively fixed to the upper portion of the face mask. Thus, while figure 3 shows the exterior surface of the eye shield, figure 4 shows the interior surface of the eye shield.

Figure 5 merely shows another embodiment of the eye shield which can be utilized in the face protector of the present invention. Figure 6 shows another type of well known face mask 22 which can be utilized in combination with the eye shield of the present invention. Figure 7 shows the face mask of figure 6 in its expanded form and showing the plurality of pleats 24 which are disposed in the surface of the mask.

According to the present invention, the eye shields can be first attached to the face mask and then the composite structure applied to the face of the user or alternatively, the face mask can first be applied to the face of the user and then the face mask attached while the mask is already in place.

The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one

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skilled in the art are intended to be included within the scope of the following claims.

-11-

What is claimed as an invention is:

1. A disposable face protector for shielding the face of the wearer from contamination which comprises

a face mask for covering the mouth and nose of the wearer, said face mask containing means for securing the face mask to the face of the wearer, and

a flexible eye shield having an external and internal surface for further protecting the face of the wearer, said eye shield containing upper and lower cushioning strips adhesively attached to the upper and lower portions respectively, on the internal surface of the eye shield, said lower cushioning strip further containing an adhesive material on the exposed surface thereof, said lower cushioning strip being adhesively attached to the upper portion of the face mask thereby forming a composite face mask, eye shield structure.

2. The face protector of claim 1 wherein slots are disposed in the eye shield at the lateral edges thereof, said slots being adapted to receive the templets of eye glasses.

3. The face protector of claim 1, wherein the cushioning strips are strips of a polyurethane foam material.

4. The face protector of claim 1 wherein the securing means are string-type ties attached to the face mask.

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5. The face protector of claim 1 wherein the eye shield is provided with securing means.

6. The face protector of claim 5 wherein the securing means are string ties.

7. The face protector of claim 1 wherein the eye shield is made of a flexible plastic material.

8. The face protector of claim 1 wherein the flexible plastic material is provided with an anti-fogging agent.

9. An eye shield for protection against contamination and having an external and internal surface, said eye shield being provided with a foam strip dispersed along the internal surface of the upper and lower edge portions thereof, and means for securing the eye shield to the face of the user.

10. The eye shield of claim 7 wherein lateral slots are provided in the eye shield for receiving the templets of eye glasses.

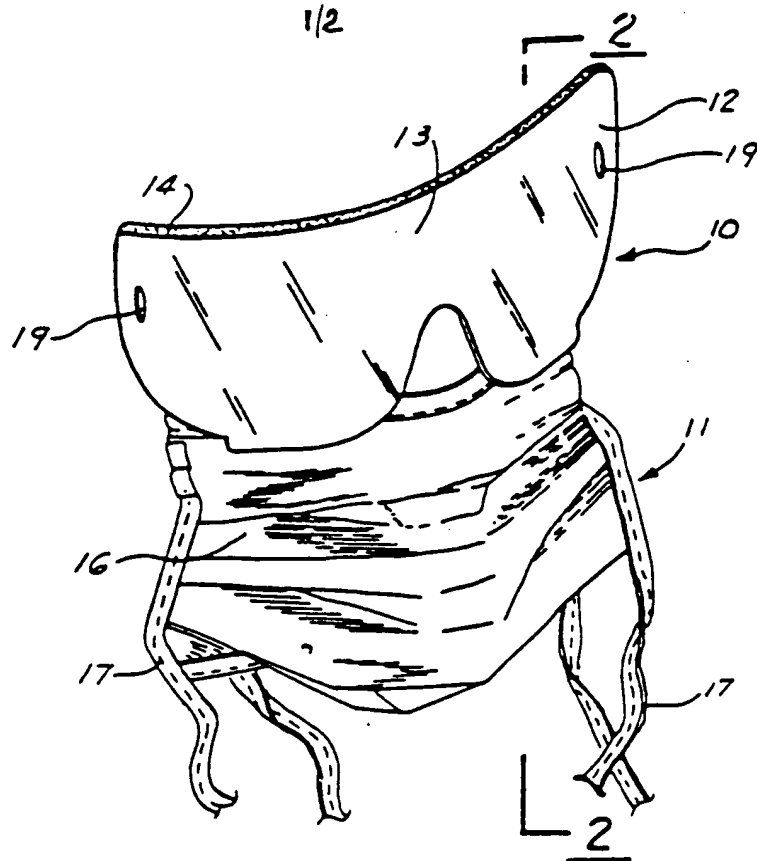


FIG. 1

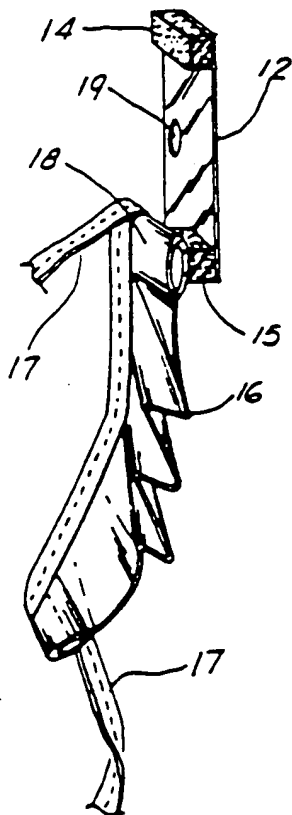


FIG. 2

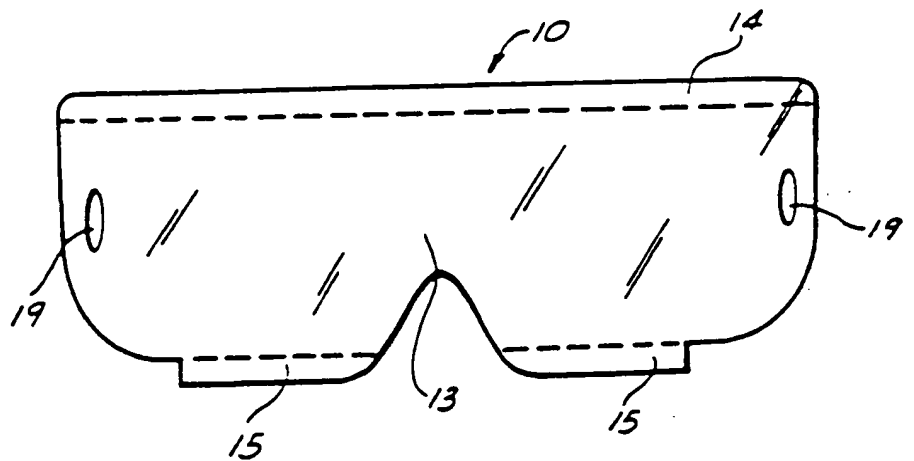
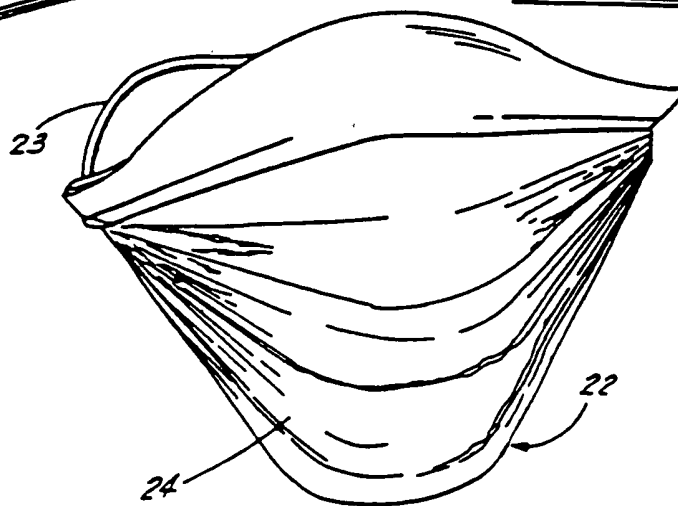
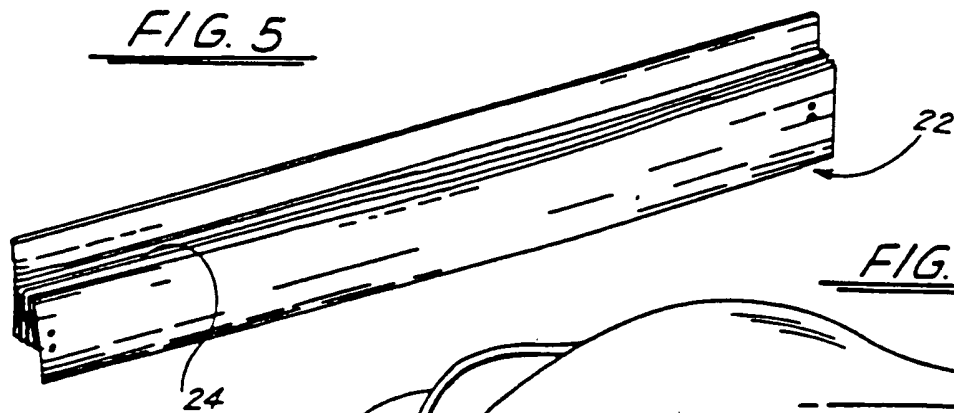
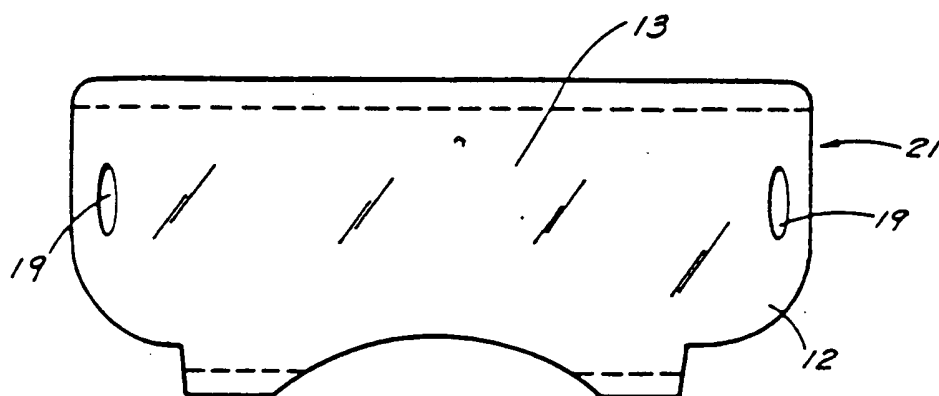
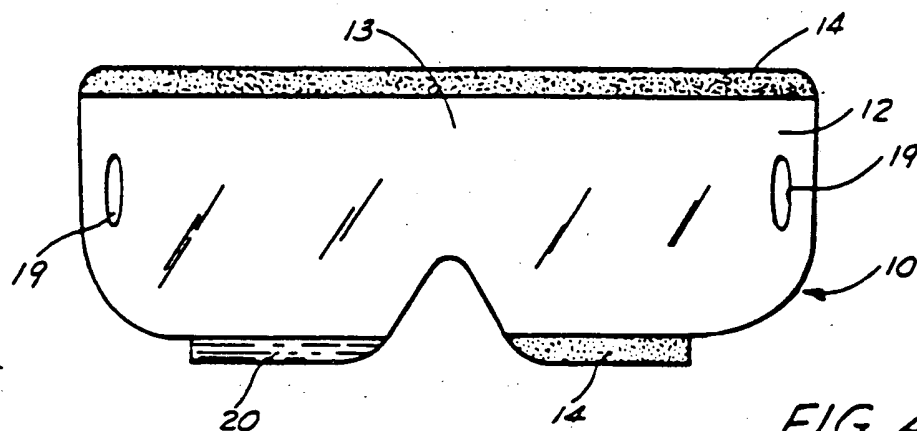


FIG. 3

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INTERNATIONAL SEARCH REPORT

International Application No. PCT/US89/01629

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC I.P.C. (4): A61F 9/04; A62B 18/00; A62B 18/02 U.S. CL: 128/206.19, 206.12, 201.15, 201.17; 2/9, 427																													
II. FIELDS SEARCHED <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black; margin: 5px 0;">Minimum Documentation Searched ⁷</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 25%; text-align: left; border-bottom: 1px solid black;">Classification System</th> <th style="text-align: left; border-bottom: 1px solid black;">Classification Symbols</th> </tr> <tr> <td style="vertical-align: top; padding: 5px;">U.S.</td> <td style="padding: 5px;">128/857, 863, 201.15, 201.17, 206.12, 206.13, 206.19 206.21, 206.23, 206.16, 206.27, 206.28, 206.24, 201.12 2/15, 427, 428, 431, 435, 8, 9, 12, DIG 7, 13, 436</td> </tr> </table> <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black; margin: 5px 0;">Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸</div>			Classification System	Classification Symbols	U.S.	128/857, 863, 201.15, 201.17, 206.12, 206.13, 206.19 206.21, 206.23, 206.16, 206.27, 206.28, 206.24, 201.12 2/15, 427, 428, 431, 435, 8, 9, 12, DIG 7, 13, 436																							
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III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹ <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%; text-align: left; border-bottom: 1px solid black;">Category [*]</th> <th style="text-align: left; border-bottom: 1px solid black;">Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²</th> <th style="width: 10%; text-align: left; border-bottom: 1px solid black;">Relevant to Claim No. ¹³</th> </tr> <tr> <td style="vertical-align: top; padding: 5px;">A,E</td> <td style="padding: 5px;">US,A, 4,821,340 (JOHNSON) 18 April 1989. See entire document.</td> <td style="vertical-align: top; padding: 5px;">1-10</td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">US,A, 2,665,686 (WOOD ET AL) 12 January 1954. See column 1, line 49-column 2, line 22.</td> <td style="vertical-align: top; padding: 5px;">1-10</td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">✓ US,A, 4,037,593 (TATE, JR.) 26 July 1977. See Abstract.</td> <td style="vertical-align: top; padding: 5px;">1-10</td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">✓ US,A, 3,974,829 (TATE, JR.) 17 August 1976. See Abstract.</td> <td style="vertical-align: top; padding: 5px;">1-10</td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">✓ US,A, 4,419,993 (PETERSEN) 13 December 1983. See Abstract.</td> <td style="vertical-align: top; padding: 5px;">1-10</td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">✓ US,A, 3,890,966 (ASPFELIN ET AL) 24 June 1975. See Abstract.</td> <td style="vertical-align: top; padding: 5px;">1-10</td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">✓ US,A, 3,888,246 (LAUER) 10 June 1975. See Abstract.</td> <td style="vertical-align: top; padding: 5px;">1-10</td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">✓ US,A, 4,464,797 (GLASSMAN) 14 August 1984. See Abstract.</td> <td style="vertical-align: top; padding: 5px;">1-10</td> </tr> </table> <div style="display: flex; justify-content: space-between; font-size: 0.8em; margin-top: 10px;"> <div style="width: 45%;"> <p>[*] Special categories of cited documents: ¹⁰</p> <p>- "A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>- "E" earlier document but published on or after the international filing date</p> <p>- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>- "O" document referring to an oral disclosure, use, exhibition or other means</p> <p>- "P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>- "A" document member of the same patent family</p> </div> </div>			Category [*]	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³	A,E	US,A, 4,821,340 (JOHNSON) 18 April 1989. See entire document.	1-10	A	US,A, 2,665,686 (WOOD ET AL) 12 January 1954. See column 1, line 49-column 2, line 22.	1-10	A	✓ US,A, 4,037,593 (TATE, JR.) 26 July 1977. See Abstract.	1-10	A	✓ US,A, 3,974,829 (TATE, JR.) 17 August 1976. See Abstract.	1-10	A	✓ US,A, 4,419,993 (PETERSEN) 13 December 1983. See Abstract.	1-10	A	✓ US,A, 3,890,966 (ASPFELIN ET AL) 24 June 1975. See Abstract.	1-10	A	✓ US,A, 3,888,246 (LAUER) 10 June 1975. See Abstract.	1-10	A	✓ US,A, 4,464,797 (GLASSMAN) 14 August 1984. See Abstract.	1-10
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IV. CERTIFICATION <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> Date of the Actual Completion of the International Search <div style="border-bottom: 1px solid black; margin-top: 5px;">29 June 1989</div> </td> <td style="width: 50%; padding: 5px;"> Date of Mailing of this International Search Report <div style="border-bottom: 1px solid black; margin-top: 5px;">19 JUL 1989</div> </td> </tr> <tr> <td style="padding: 5px;"> International Searching Authority <div style="border-bottom: 1px solid black; margin-top: 5px;">ISA/US</div> </td> <td style="padding: 5px;"> Signature of Authorized Officer <div style="text-align: center; margin-top: 5px;"> Kimberly L. Asher </div> </td> </tr> </table>			Date of the Actual Completion of the International Search <div style="border-bottom: 1px solid black; margin-top: 5px;">29 June 1989</div>	Date of Mailing of this International Search Report <div style="border-bottom: 1px solid black; margin-top: 5px;">19 JUL 1989</div>	International Searching Authority <div style="border-bottom: 1px solid black; margin-top: 5px;">ISA/US</div>	Signature of Authorized Officer <div style="text-align: center; margin-top: 5px;"> Kimberly L. Asher </div>																							
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III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	US,A, 1,706,682 (TAKACS) 26 March 1929. See Abstract.	1-10
X	US,A, 911,476 (CHEESMAN) 02 February 1909. See column 1, lines 57-85, and 101-110.	1
Y	US,A, 2,056,753 (WAGNER) 06 October 1936. See entire document.	1,4,6,7
.Y	US,A, 2,541,242 (GROVE) 13 February 1951. See entire document.	2,10
Y	US,A, 2,353,978 (WEBER) 18 July 1944. See entire document.	8
Y	US,A, 2,400,720 (STAUDINGER ET AL) 21 May 1946. See entire document.	8
$\frac{X}{Y}$	US,A, 2,907,041 (FINN) 06 October 1959. See entire Document.	$\frac{9}{3,5}$